Ltr, DDC:DDC-IRA), 1 Jul 64, Clarification of Limited Access Reports

1st Ind (SSS)

21 SEP 1964

Hq SSD, USAF, Air Force Unit Post Office, Los Angeles, Calif 90045

TO: Hq DDC (DDC-IRA), Cameron Station, Alexandria, Virginia 22314

1. The attached documents have been reviewed and determined not to contain any information falling within the purview of DOD Directive S5230.23 as implemented by AFR 205-23 and AFR 80-29, paragraph 8a(7).

2. Special Access Requirements do not apply to documents prepared prior to 1 August 1962; however, if these documents are updated or if the information is used in relation to sensitive space programs since 1 August 1962 the special requirement is necessary.

3. This indorsement contains no classified information.

FOR THE COMMANDER

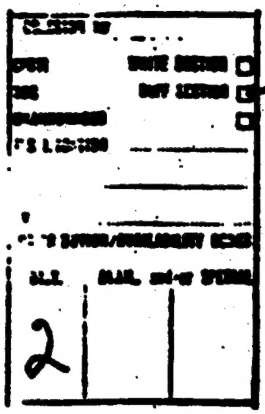
KENNETH E. INGRAM
Major, USAF
Chief, Systems Security
and Classification Division

1 Atch
w/o

WHEN UNCLASSIFIED WITH SEPARATED FROM CLASSIFIED ENCLOSURE(S)

C-STACKS
LMSD-
2903
ABRIDGED

[redacted]



"This document contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U. S. C., Section 793 and 794. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law."

ADVANCED RECONNAISSANCE SYSTEM

WEAPON SYSTEM 117L

Presenting in summary form the development concepts and present status of the "New Horizon" Weapon System program

In addition to security requirements which must be met, this document is subject to special export controls, and each transmittal to foreign governments or foreign nationals may be made only with prior approval of AFSSD Code SSSO.

LMSD-2903

Lockheed Aircraft Corporation
Missile Systems Division

1 March 1958, 61 pp.

DOWNGRADED AT 12 YEAR INTERVALS;
NOT AUTOMATICALLY DECLASSIFIED
DOD DIR 5200.10

2

[redacted]

DDC
MAR 22 1958

[redacted]

ADVANCED RECONNAISSANCE SYSTEM

Short Titles: ARS. WS-117L
Official Nickname: "New Horizons"

The ultimate objective of the WS-117L program is to provide continuous surveillance (visual, electronic and infrared) coverage of the USSR and USSR-dominated countries. In keeping with this objective, the types of intelligence required in order of priority are: strategic warning, enemy military forces in being, enemy military stockpiles of thermonuclear-atomic weapons, enemy logistic capabilities, and enemy industrial war capabilities.

Key R&D action dates relating to this program were:

March 1955	GOR 80 (SA-2C) issued
October 1955	System Requirement established
March 1956	Evaluation of Design Study completed
August 1956	Hq USAF approval of Development Plan; Development Directive issued
October 1956	Letter Contract AF 04(647)-97 issued to Lockheed Aircraft Corp., Missile Systems Division; as Weapon System Contractor
September 1957	Air Staff, with DOD concurrence, decides to support WS-117L in a more substantial manner
January 1958	Contract -97 definitized, a new letter contract executed to provide program acceleration and augmentation

The WS-117L program development plan embodies the placement of a series of unmanned satellites in prescribed orbits about the earth. Two basic types of satellite vehicle reconnaissance systems will be employed. The first type provides for the operation of satellite vehicles utilizing a radio link which relays to ground stations all data gathered by the satellites. The SM-65 Atlas will be used as a booster for these satellite vehicles with the first flight test scheduled to take place in June 1959. The second basic type, introduced into the development program in January 1958, is designed to permit physical recovery of photographic film or other payload components. Thor IRBM missiles will be used as boosters for these satellites with the first flight-test date scheduled for October 1958.

The [illegible] for the complete system, in each instance, encompasses the following: (1) research, design, development and fabrication of the satellite vehicles, their payloads, communications networks and ground support equipment; (2) site selection of launching and tracking stations, design and construction of support facilities, and the definition of operational manpower requirements; (3) the function of launching and tracking, data reception, processing, interpretation and dissemination.

3

[redacted]

WEAPON SYSTEM 117L

LOCKHEED MISSILE SYSTEMS DIVISION KEY PERSONNEL

L. Eugene Root	Corporate Vice President and LMSD General Manager
Willis M. Hawkins	Assistant General Manager, Weapon Systems
Dr. L. N. Ridenour	Chief Scientist
J. H. Carter	Manager, New Horizons Weapon System Branch
R. M. Salter, Jr.	Assistant Manager, New Horizons Weapon System Branch
Dr. S. [redacted] Bastorf	Scientific Advisor, New Horizons Project
Fred W. O'Green	Director, New Horizons Development Division
R. D. King	Director, New Horizons Test Management and Operations Division
W. C. Holmes	Director, New Horizons Program Administration Division

Subsystem Development Managers:	Subsystem
Ralph O. Youngberg	A- Airframe
Dr. W. C. Neuggereth	B- Propulsion
C. W. Burrell	C- Auxiliary Power
Dr. W. E. Frye	D- Guidance and Control
James W. Plummer	E- Visual Reconnaissance
P. D. Doerrer	F- Covert Reconnaissance
J. J. Knapow	G- Infrared Reconnaissance
Dr. J. Jenkins	H- Communications

[redacted]

[redacted]

C

WEAPON SYSTEM 117L

PRINCIPAL SUBCONTRACTORS KEY PERSONNEL

Propulsion
Bell Aircraft Corporation
P. O. Box 1
Buffalo 5, N. Y.
Telephone: Niagara Falls-7 851
Mr. J. Magalhaes

Visual Reconnaissance
Eastman Kodak Co.
Naval Ordnance Division
25 Lincoln Avenue
Rochester 11, N. Y.
Telephone: Genesee 8-8989
Mr. Donald Stevens

Columbia Broadcasting System, Inc.
CBS Laboratories
485 Madison Avenue
New York 22, N. Y.
Telephone: Plaza 1-2345
Mr. A. Mastolo

General Electric Co.
Special Projects Department
3198 Chestnut Street
Philadelphia 4, Pennsylvania
Telephone: EV 2-7800
Mr. L. L. Stahl

Fairchild Camera & Instrument Corp.
Robbins Lane
Syosset, Long Island, N. Y.
Telephone: Hempstead, N. Y. WE 1-4500
Mr. Richard Hodgson

Forest Reconnaissance
[redacted]

Infrared Reconnaissance
Aerojet-General Corp.
6352 North Irwindale Avenue
Covina, California
Telephone: Edgewood 4-6211
Dr. Raymond McFee

Ground-Space Communications
Philco Corp.
806 Chestnut Street
Redwood City, California
Telephone: EM 9-8921
Dr. W. B. LaBarge

5

C

[redacted]

ADVANCED RECONNAISSANCE VEHICLE

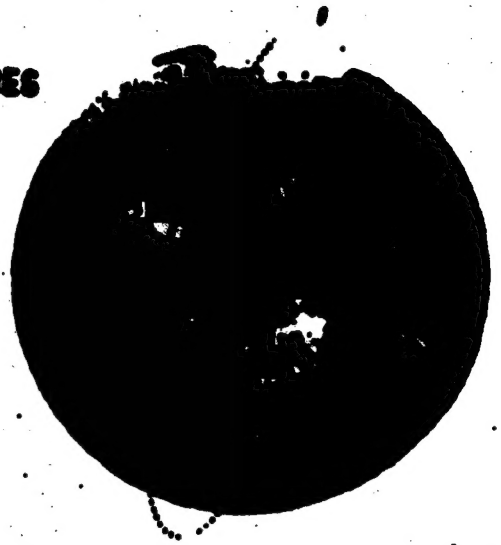
An artist's conception of the WS-117L Advanced Reconnaissance System satellite vehicle -- Pioneer visual model -- on orbit, as viewed from outer space.

Line of flight is along axis of rods supporting the extended helium spheres. These spheres assist in maintaining stability of the vehicle in a nose-down position.

[redacted]

KEY CHARACTERISTICS

- COMPLETE TARGET AREA COVERAGE
- ACCURATE SPECIFIC TARGET LOCATION
- CONTINUOUS TARGET AREA SURVEILLANCE
- INSTANTANEOUS WARNING OF ICBM ATTACK
- NEARLY INVULNERABLE TO ATTACK OR COUNTER MEASURES
- NO AIRCREWS
- NO OVERSEAS BASES
- INVADES NO AIRSPACE
- HIGH DATA RATE
- ECONOMICAL PER UNIT OF DATA
- FAST RESPONSE
- GROWTH POTENTIAL



P 310 IN S 10/15/57

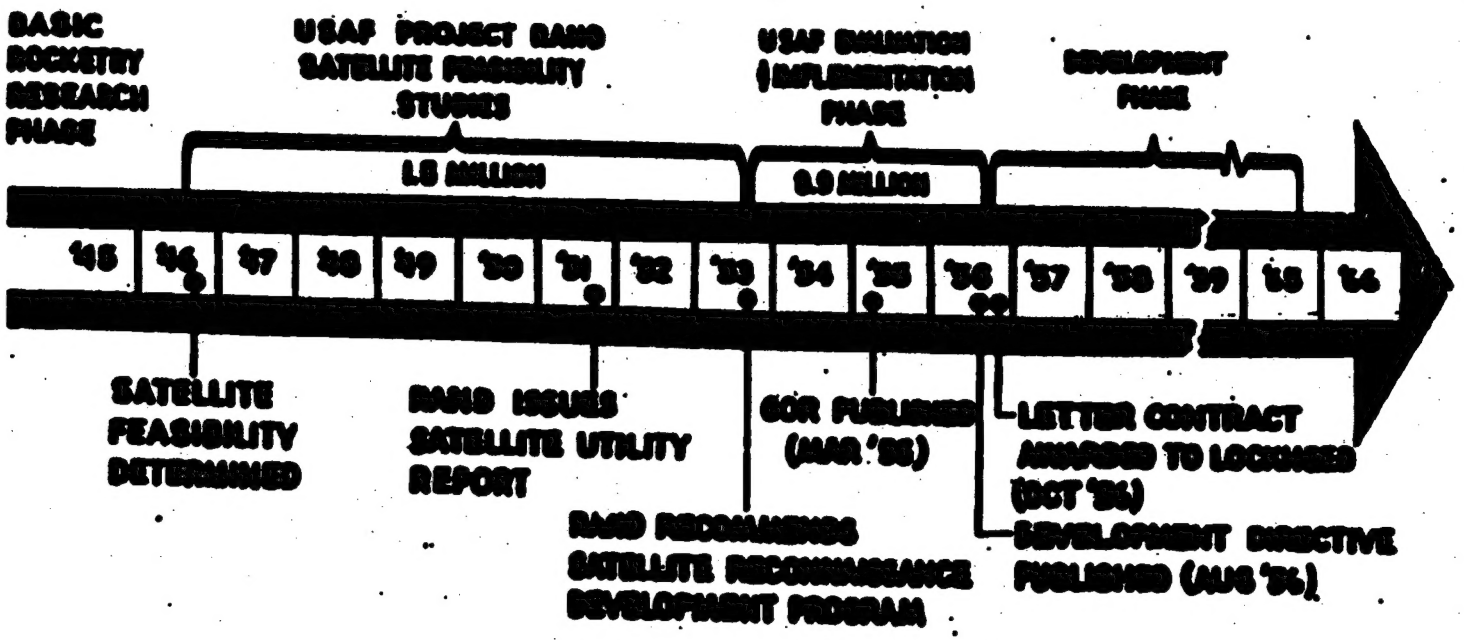
[redacted]

[redacted]

KEY CHARACTERISTICS OF THE ADVANCED RECONNAISSANCE SYSTEM

A listing of some of the unique characteristics of a reconnaissance system based on the use of satellite vehicles as a platform for data-gathering devices.

[redacted]



P16 (2) 8 11/1/57

[redacted]

[redacted]

ADVANCED RECONNAISSANCE SYSTEM EVOLUTION

Demonstrates that the WS-117L program represents the culmination of intensive studies and analyses dating from the immediate post-WW II period. Although it was determined as early as 1947 that the launching of satellite vehicles was technically feasible, studies were continued until it could be demonstrated that such satellites would have a significant military utility and be economically competitive with alternative systems. Concurrent development of ICBM/SLBM missiles promised a great reduction in satellite development costs and left little doubt that the military worth of a satellite reconnaissance system would amply justify its costs.

As presently conceived, the development phase of the ARS program will continue through 1965.

[redacted]

WS 117L PROGRAM OBJECTIVES

PROGRAM TITLE	[redacted] MAJOR DEVELOPMENT OBJECTIVES
I. ENGINEERING PROTOTYPE DEVELOPMENT & TESTS	PLACE STABILIZED SATELLITES ON ORBIT AT 300 N.M. AT TITUDE TEST RECONNAISSANCE PAYLOAD AND GENERAL SYSTEMS OPERATIONS
II. PIONEER VISUAL RECONNAISSANCE	PROVIDE SMALL SCALE PHOTOGRAPHIC COVERAGE OF HIGH SATELLITE ORBIT FOR EVALUATION, VIDEO TRANSMISSION OF PHOTO IMAGES 1 MILE TARGET LOCATION ACCURACY
IIA. PAYLOAD RECOVERY	PLACE SATELLITE RECONNAISSANCE CAMERA ON POLAR ORBIT RECOVER FILM CAPSULE, PROCESS FILM TO STANDARD IMAGES
III. [redacted]	[redacted]
IV. ADVANCED VISUAL RECONNAISSANCE	PROVIDE HIGH RESOLUTION PHOTOGRAPHS OF SPECIFIC GROUND TARGETS 1 MILE TARGET LOCATION ACCURACY
V. [redacted]	[redacted]
VI. VISUAL SURVEILLANCE	SIMILAR TO PROGRAM IV, BUT WITH: REAL TIME VIDEO TRANSMISSION OF DATA PERMANENT RECORDING FOR FILM
VII. INFRARED SURVEILLANCE	PROVIDE SATELLITE SYSTEM TO FURNISH INFORMATION DURING BY AN ICBM ATTACK EVALUATION SYSTEM TO PROVIDE PRECISION AREA DETECTION-PREDICTION DATA
VIII. [redacted]	[redacted]

[redacted]

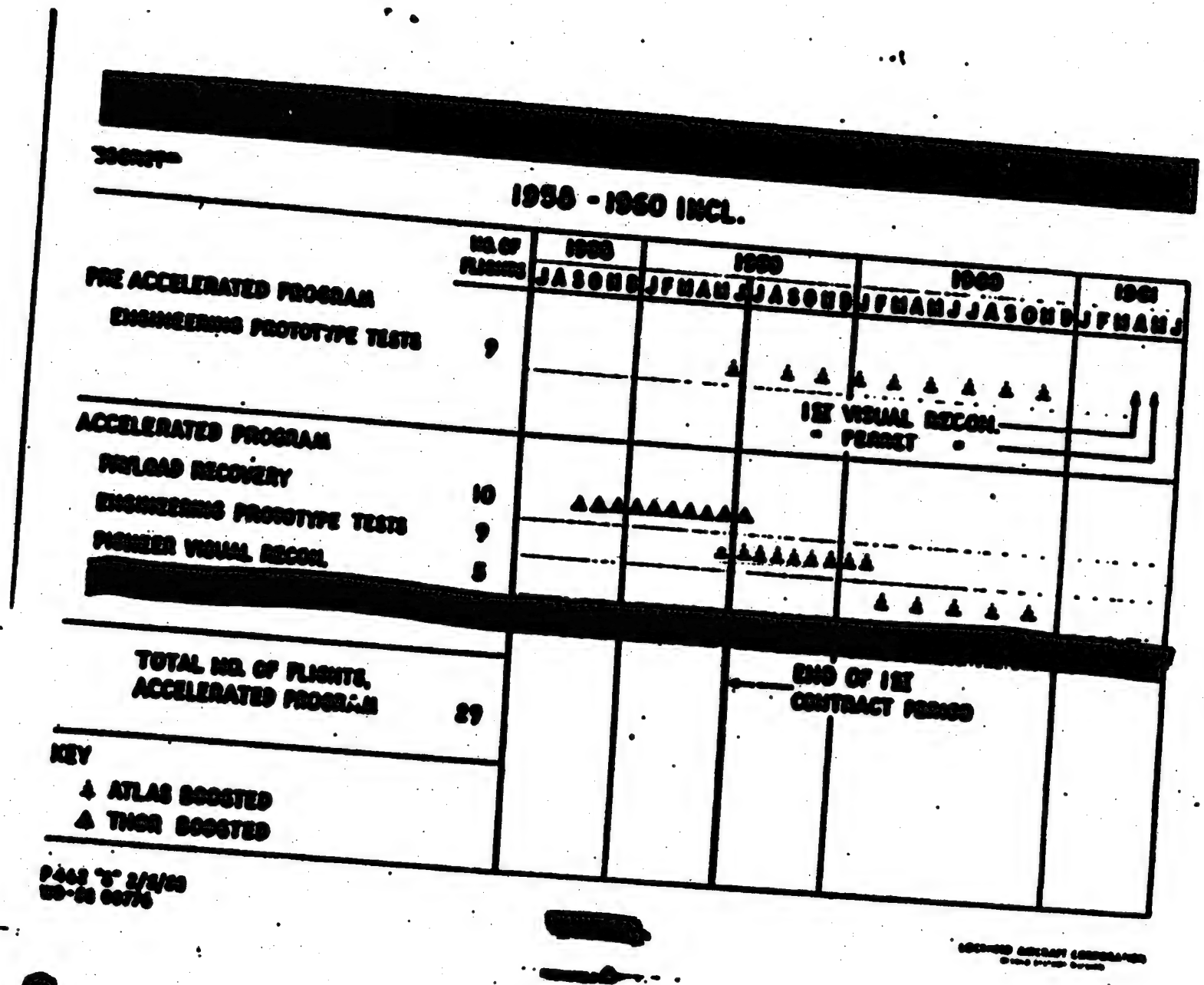
[redacted]

RS-117L PROGRAMS AND OBJECTIVES

Presents the eight development programs and their principal objectives. These programs have been chosen and phased to meet two major development objectives:

1. Optimize the development of the operational Advanced Reconnaissance System in terms of the best balance between early availability, effectiveness, and overall economy in terms of manpower and funds

2. Provide a stepwise series of reconnaissance systems capable of collecting significant intelligence of high priority at the earliest dates.


1958 - 1960 INCL.
NO. OF FLIGHTS
1958
1959
1960
1961
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
PRE ACCELERATED PROGRAM
ENGINEERING PROTOTYPE TESTS
9
IBX VISUAL RECON.
FERRET
ACCELERATED PROGRAM
PAYLOAD RECOVERY
10
ENGINEERING PROTOTYPE TESTS
9
PIONEER VISUAL RECON.
5
TOTAL NO. OF FLIGHTS, ACCELERATED PROGRAM
29
END OF IBX CONTRACT PERIOD
KEY
ATLAS BOOSTED
THOR BOOSTED

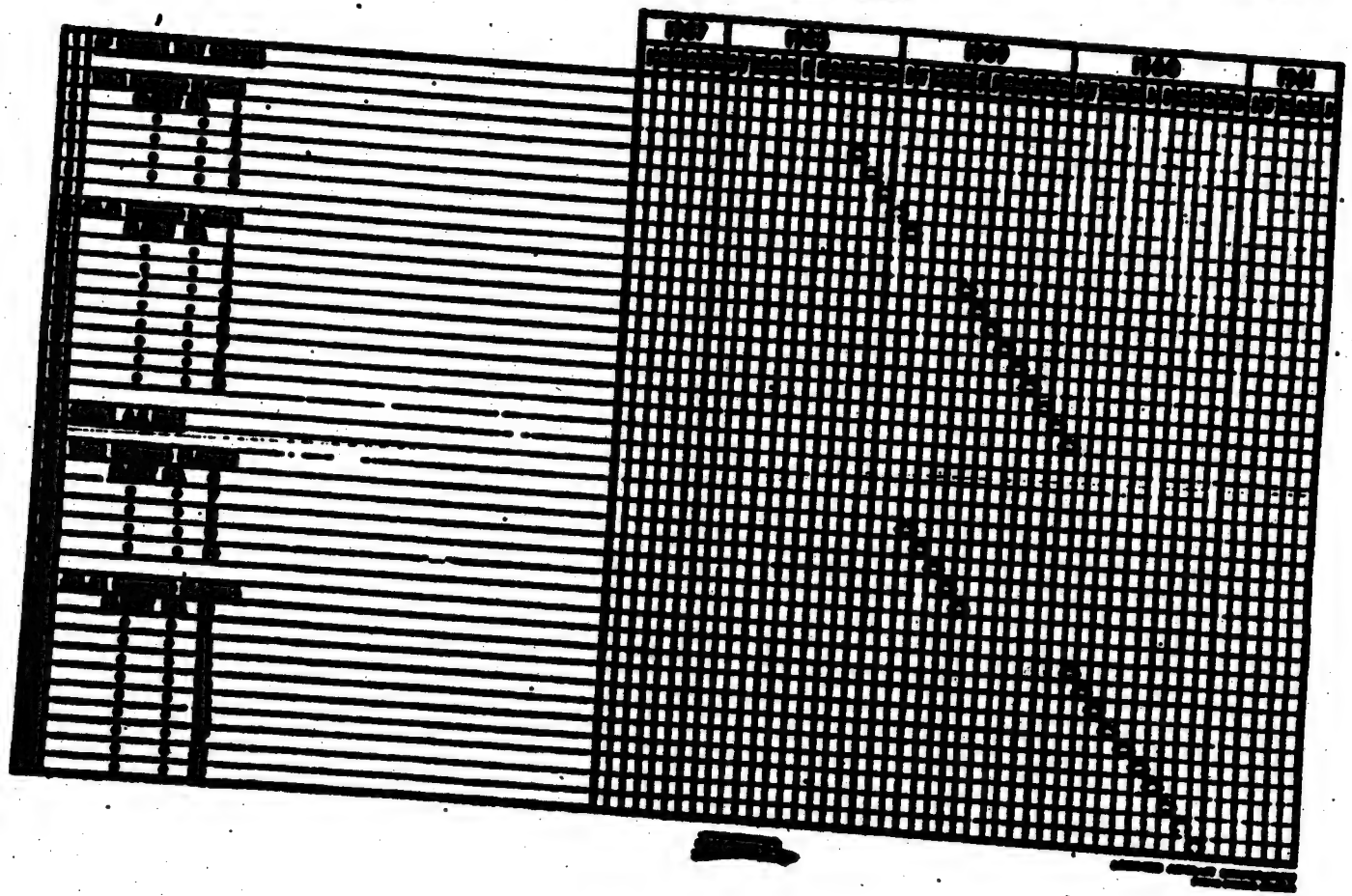
SCHEDULE DATA

Presents flight dates for both the pre-accelerated WS-117L program and the current program as determined in January 1958.

[redacted]

WS 117L FLIGHT TEST BY LAUNCH SITE LOCATION

OCT. 1958 - DEC. 1960



[redacted]

FLIGHT TESTS BY LAUNCH SITE LOCATION

Presents the NS-117L accelerated schedule flight test dates according to launch site location. Early availability of a suitable launch complex at Cocke AFB is imperative in order that the flight test program may be carried out on schedule.

[redacted]

WS117L PROGRAM SUMMARY THRU DEC 1960

COMPARATIVE SCHEDULE REQUIREMENTS

	PROGRAM FINISH TO 1-22-59	ACCELERATED PROGRAM
1ST ORBIT FLIGHT TEST	JUNE '60	OCT. '58
1ST VISUAL RECONN. CAPABILITY	MARCH '61	MARCH '60

[redacted]

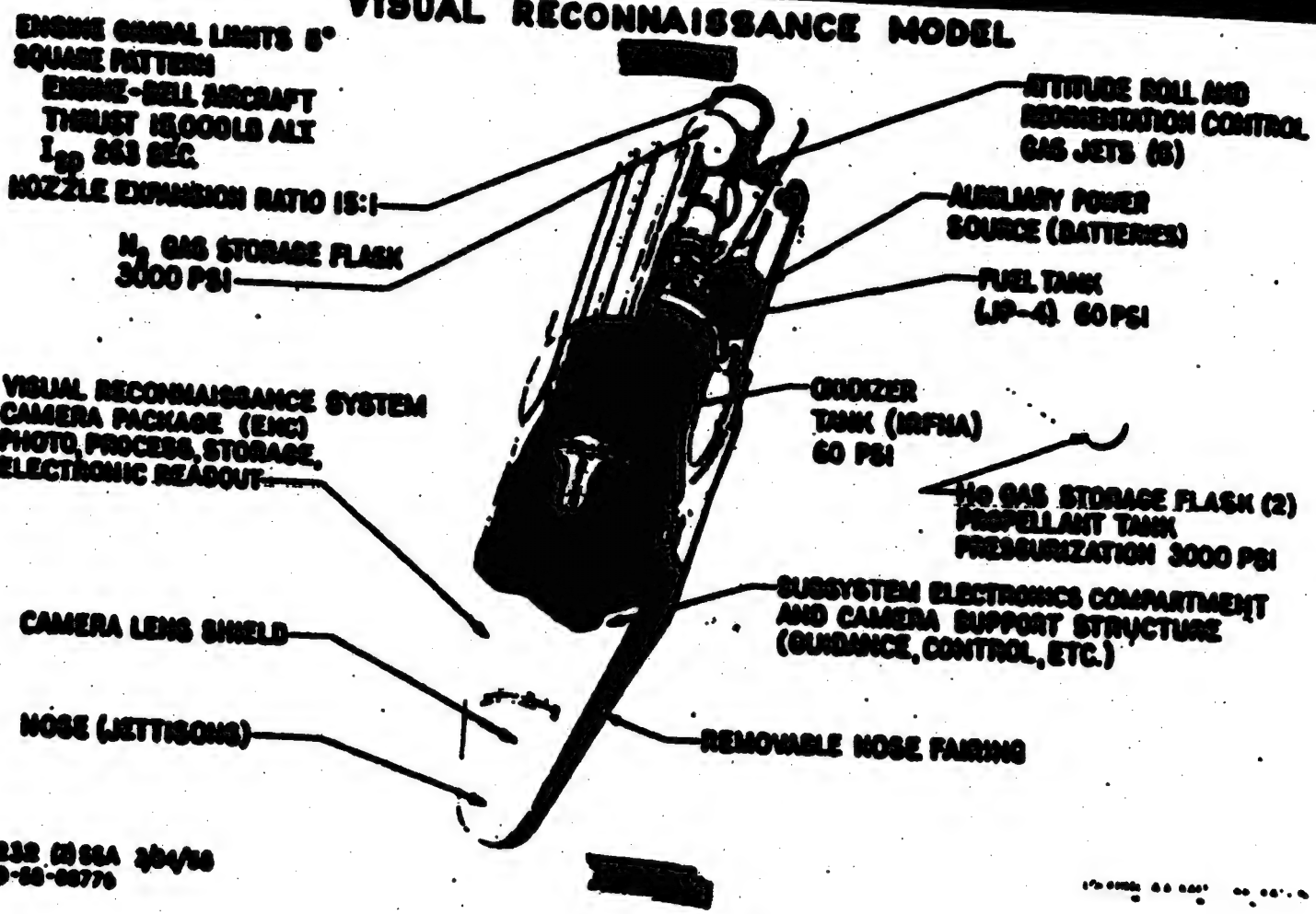
VEHICLE PRODUCTION REQUIREMENTS		
VEHICLE MOCKUP	1	1
STRUCTURAL TEST VEHICLE	1	1
PROPULSION TEST VEHICLE ASSEMBLIES	2	3
CAPTIVE TEST VEHICLES	1	1
SYSTEM TEST VEHICLES	0	1
FLIGHT TEST VEHICLES	9	30
NO. OF THOR BOOSTED SATELLITE LAUNCHINGS	0	10
NO. OF ATLAS BOOSTED SATELLITE LAUNCHINGS	9	19
TOTAL NO. OF SATELLITE LAUNCHINGS	9	29

[redacted]

RS-117L PROGRAM SUMMARY THROUGH DECEMBER 1960

A summary of the significant schedule changes brought about by the decision (as of 22 January 1960) both to accelerate the program schedule and to augment it with a Thor-boosted satellite payload recovery program.

VISUAL RECONNAISSANCE MODEL



P232 (2) SSA 3/24/66
MB-66-66776

[redacted]

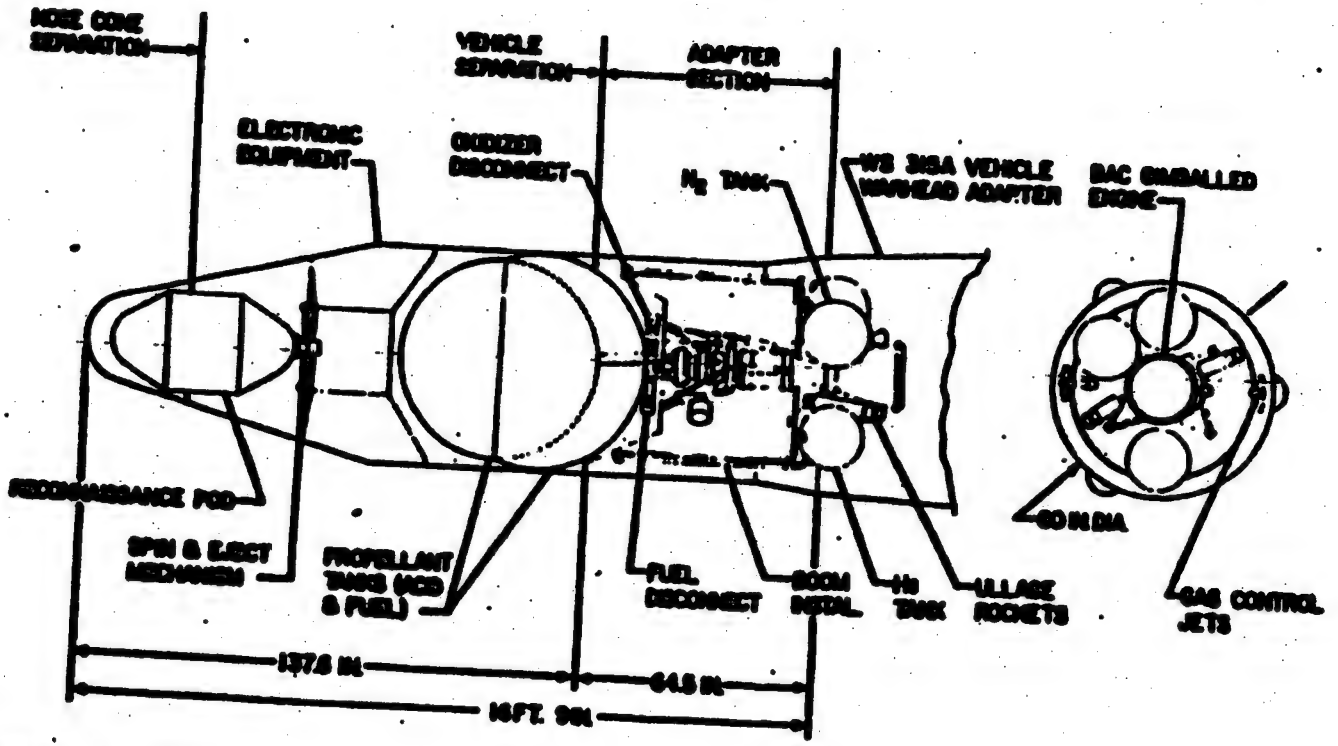
ARS SATELLITE VEHICLE

Inboard profile and general configuration of the ARS satellite vehicle, engineering prototype and pioneer model.

Overall length	19'0"
Width	5'0"
Weight:	
Payload	2,689 lbs
Structure, propulsion units, guidance and control equipment	1,540 lbs
Weight empty	4,229 lbs
Propellants	5,069 lbs
Total weight at launch	9,300 lbs

[redacted]

[redacted]



P408(j) 8 2/12/58
WP-58-0078

[redacted]

[redacted]

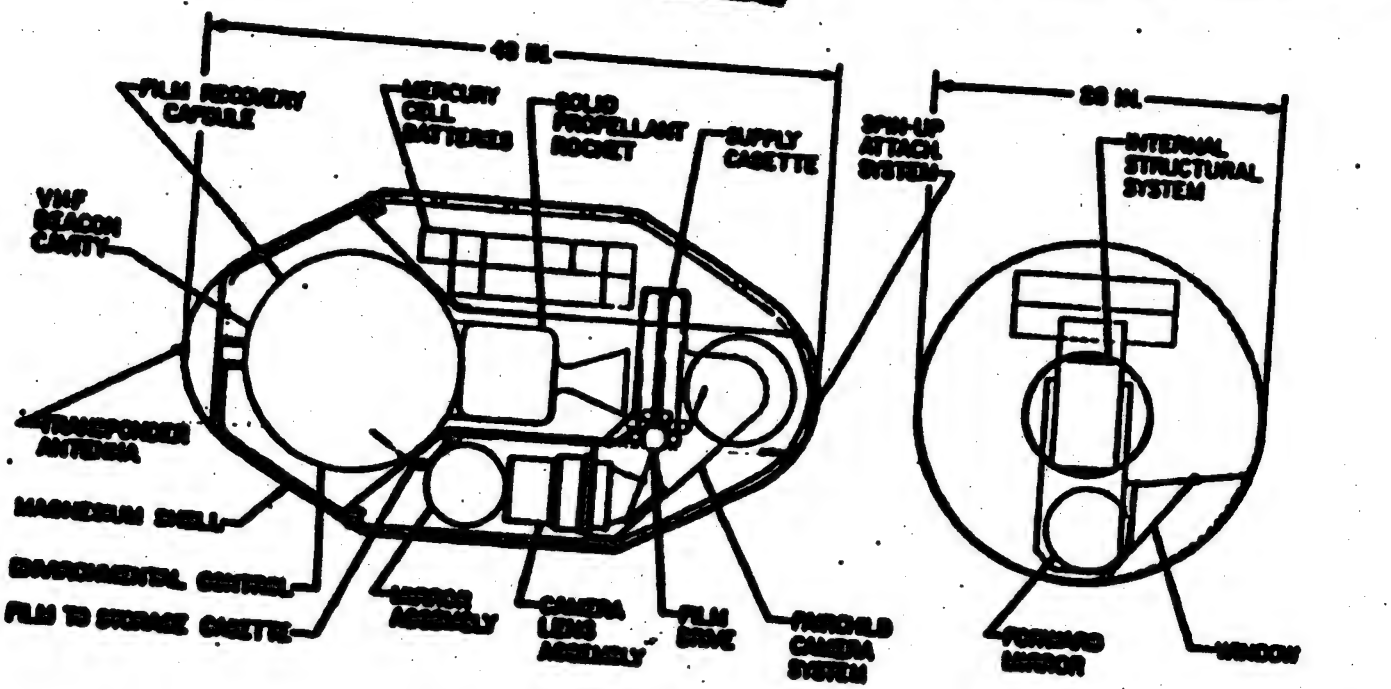
RS-117L PAYLOAD RECOVERY SATELLITE VEHICLE

Shows the major components associated with the satellite vehicle designed to carry a reconnaissance pod into orbit. The components required to effect separation, all-gas control, orbital boost propulsion, attitude control, and reconnaissance pod spin-up and eject are shown. After separation from the vehicle the spin of the reconnaissance pod serves to stabilize it in inertial space and also provides the means for panoramic scanning of the earth's surface by the enclosed camera.

[redacted]

[redacted] RECONNAISSANCE POD

[redacted]



[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

52

RS-117L RECONNAISSANCE POD

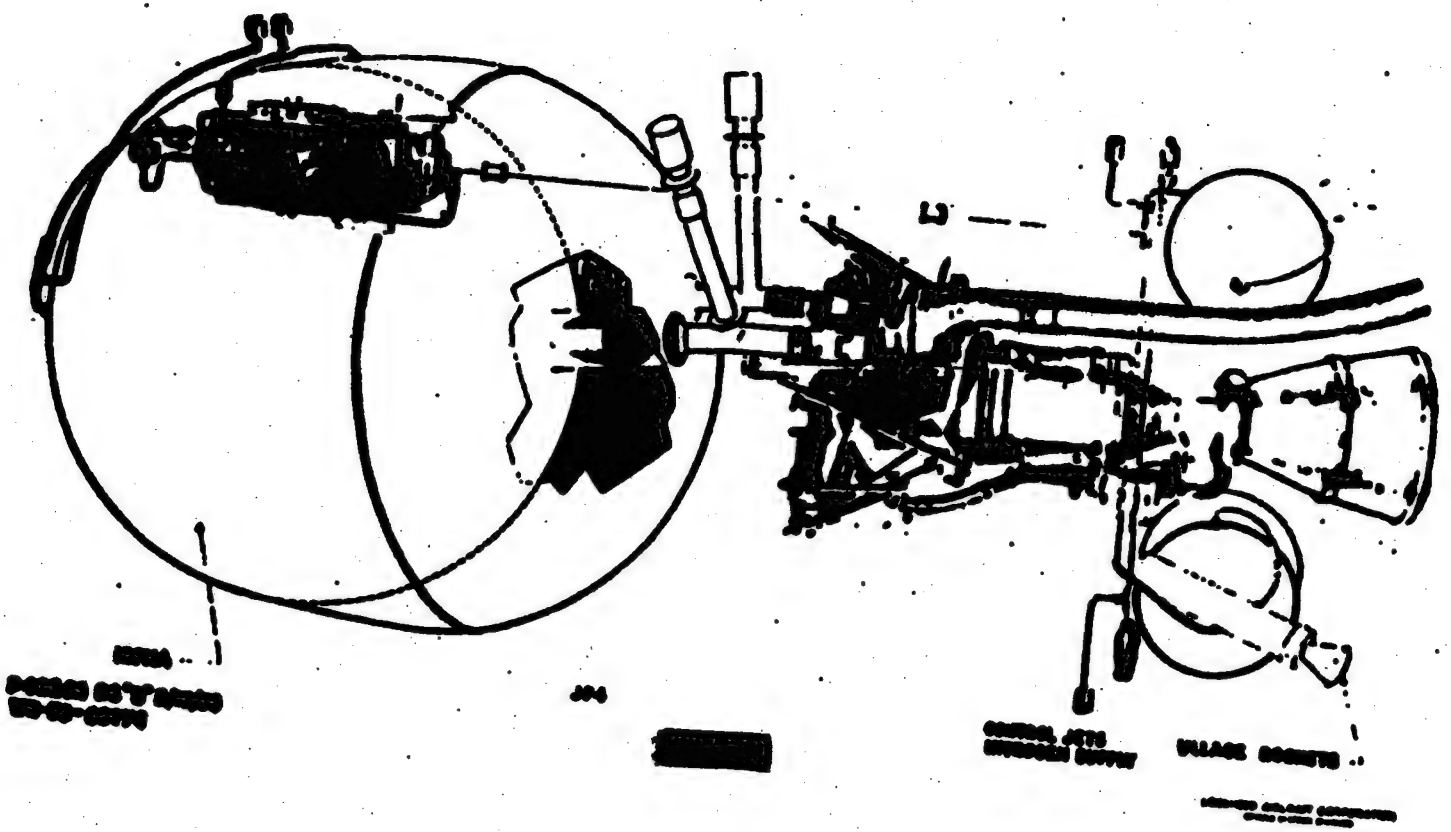
Shows the major components of the reconnaissance pod designed to obtain panoramic reconnaissance photographs from a satellite orbit and store the exposed film in a recoverable capsule. At the completion of the reconnaissance mission the solid propellant rocket propels the film recovery capsule into a recovery trajectory for return to the earth's surface.

[redacted]

[redacted]

WS 117L PROPULSION SYSTEM

[redacted]



[redacted]

[redacted]

(U)

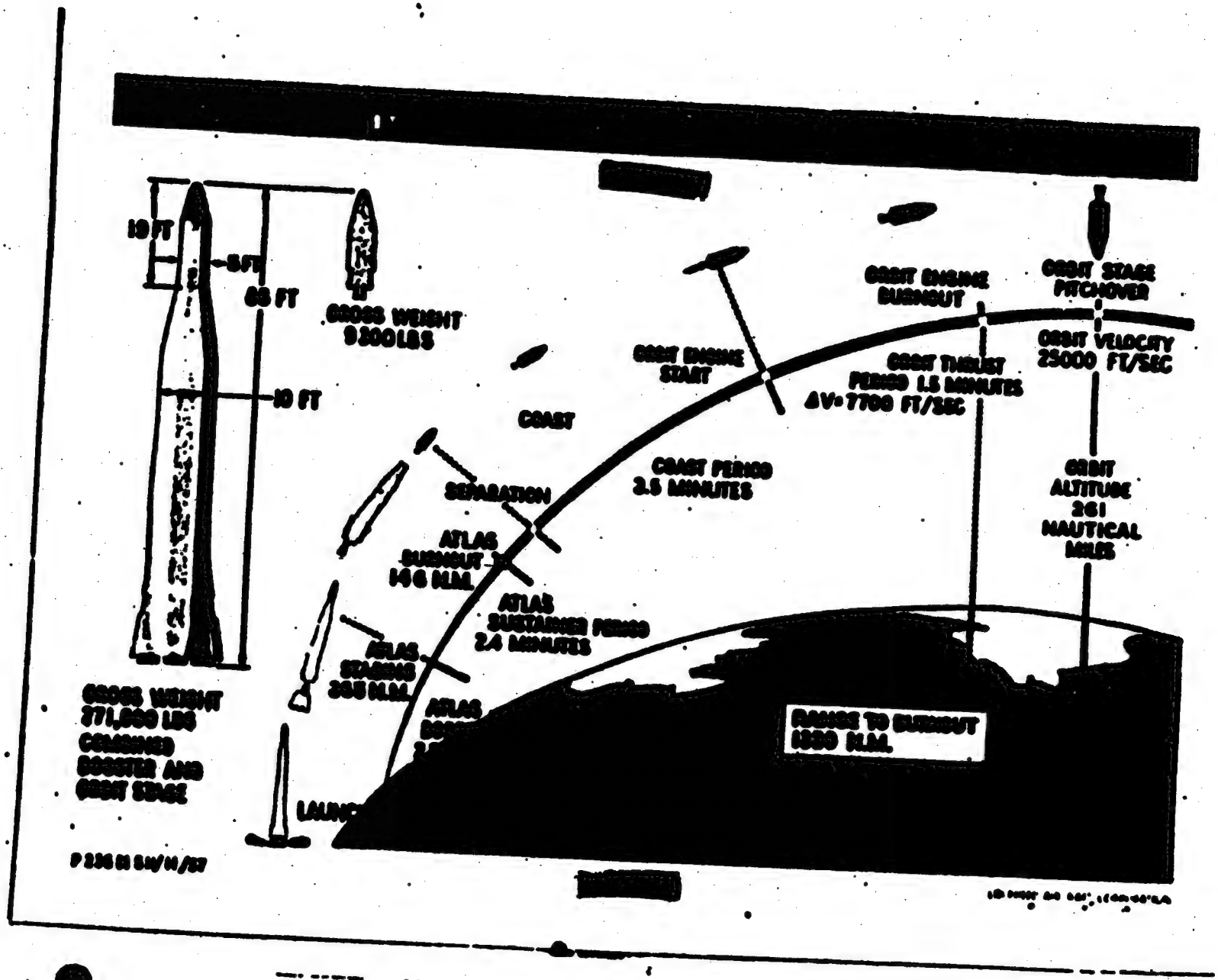
(U)

RS-117L VEHICLE PROPULSION SYSTEM

A photograph of the Bell Aircraft Corporation "Hustler" engine in schematic relationship to other major propulsion system components. As indicated, the engine is gimbal-mounted in order that thrust direction may be controlled. Engine performance specifications are:

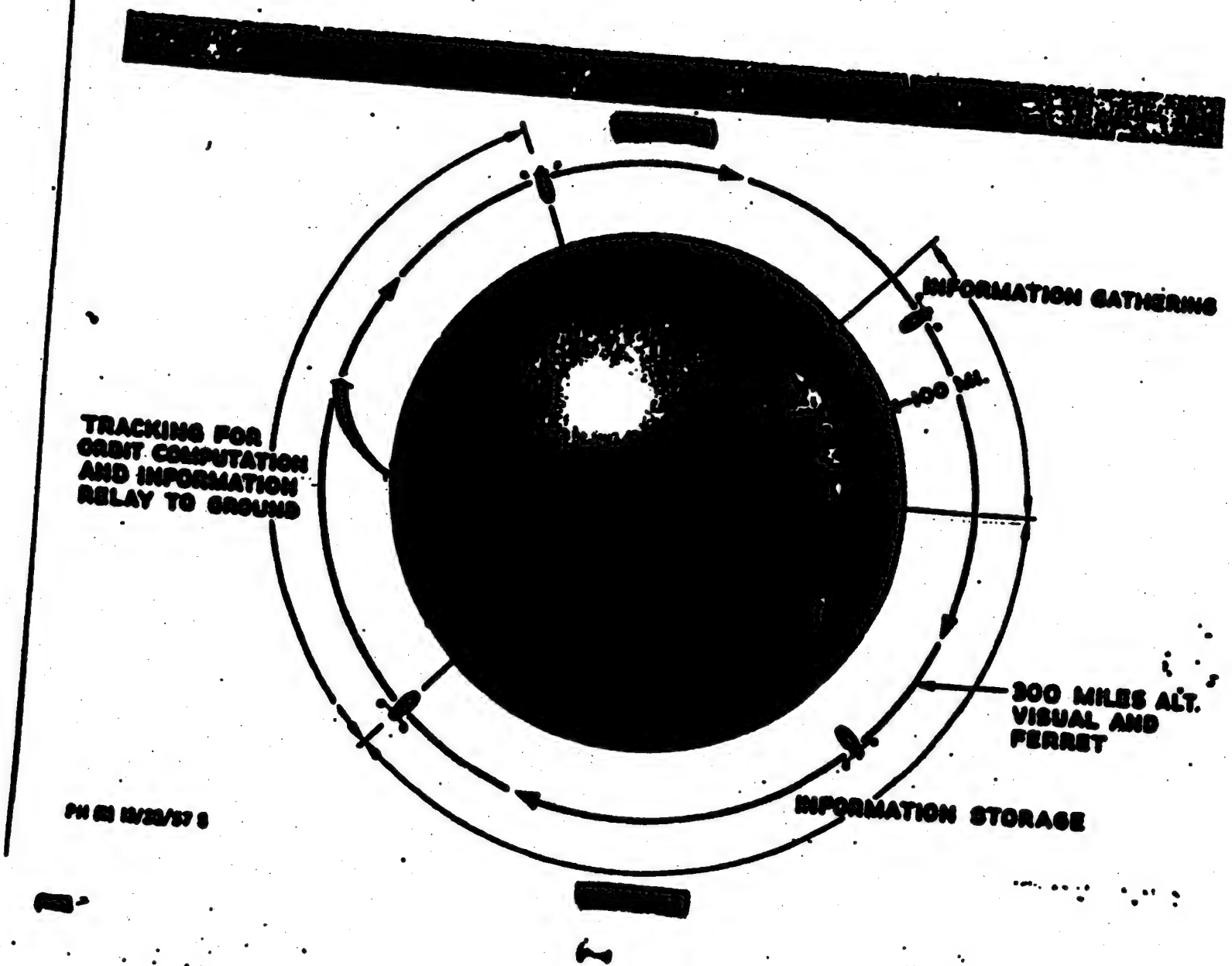
Thrust in a vacuum	15,150 lbs
Minimum specific impulse	263 sec
Maximum specific impulse	269 sec

Nested spherical tanks contain the propellants which are pressure-fed to the combustion chamber; pressure is supplied by helium contained in the two spherical tanks shown on either side of the thrust chamber. The engine is started by the simultaneous ignition of a solid propellant charge in the gas generator and the opening of a connection between the two propellant tanks. Prior to engine start, propellants in the tanks are properly oriented and gas bubbles expelled by the firing of two solid ullage control rockets.


10 FT
5 FT
68 FT
10 FT
GROSS WEIGHT
9300 LBS
GROSS WEIGHT
271,000 LBS
COMBINED
BOOSTER AND
SUSTAINER STAGE
ORBIT ENGINE
BURNOUT
ORBIT STAGE
PITCHOVER
ORBIT VELOCITY
25000 FT/SEC
ORBIT ENGINE
START
ORBIT THRUST
PERIOD 1.5 MINUTES
ΔV= 7700 FT/SEC
COAST
COAST PERIOD
2.5 MINUTES
SEPARATION
ORBIT
ALTITUDE
261
NAUTICAL
MILES
ATLAS
BURNOUT
146 N.M.
ATLAS
SUSTAINER PERIOD
2.4 MINUTES
ATLAS
STAGING
268 N.M.
RANGE TO BURNOUT
1020 N.M.

ARS VEHICLE TRAJECTORY TO ORBIT

Presentation of flight launch phase of the Advanced Reconnaissance System satellite vehicle. Reconnaissance satellite separation is accomplished by the use of recording packets attached to the Atlas. Satellite placement and ejection is a procedure problem to be achieved by disconnected gas jets as shown in the vehicle configuration drawing.


INFORMATION GATHERING
100 MI.
TRACKING FOR ORBIT COMPUTATION AND INFORMATION RELAY TO GROUND
300 MILES ALT. VISUAL AND FERRET
INFORMATION STORAGE

[redacted]

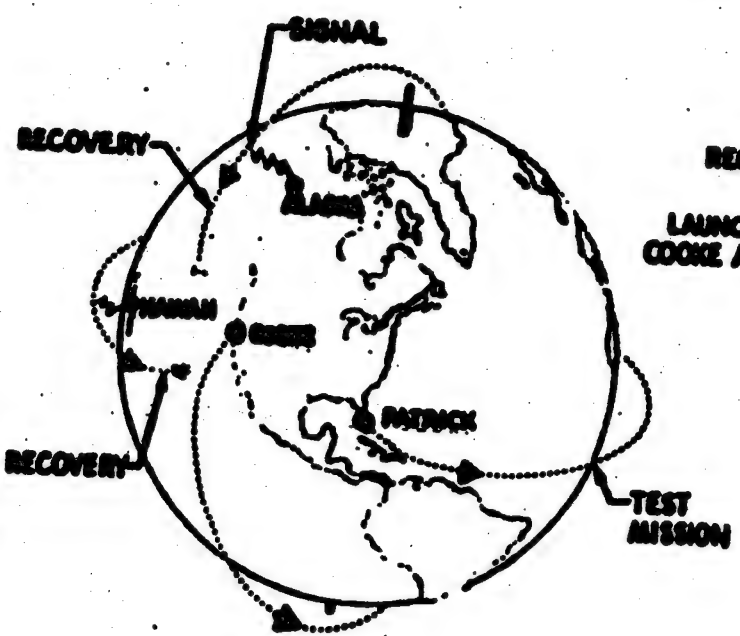
ADVANCED RECONNAISSANCE SATELLITE ORBIT SCHEMATIC

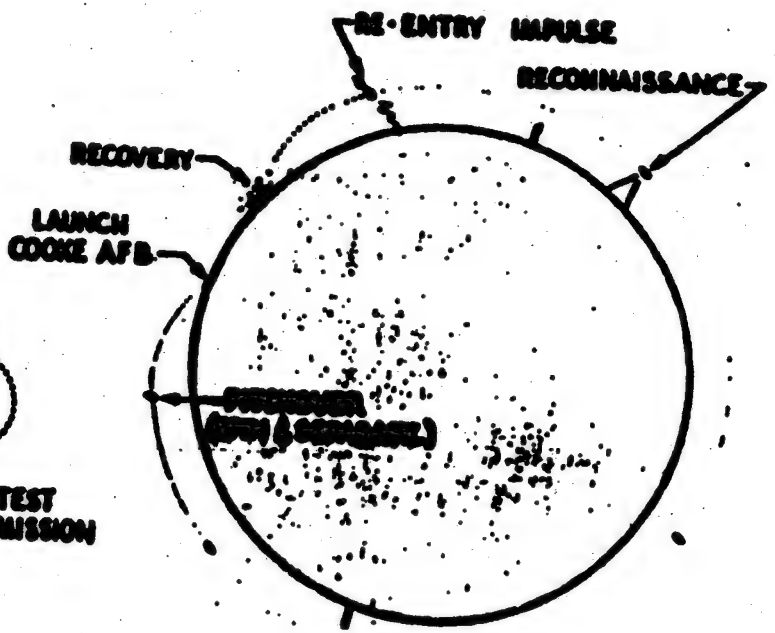
Illustrates how orbiting reconnaissance satellite gathers and stores intelligence data while passing over territory of interest, then relays ("reads out") the data while passing over ZI-located control stations.

As indicated, the pioneer visual system, utilizing a 6-inch focal length lens, photographs a swath 1500 miles long by 100 miles wide.

[redacted]

[redacted]





OPERATIONAL MISSION

[redacted]

WS-117L PAYLOAD RECOVERY MISSION PROFILE

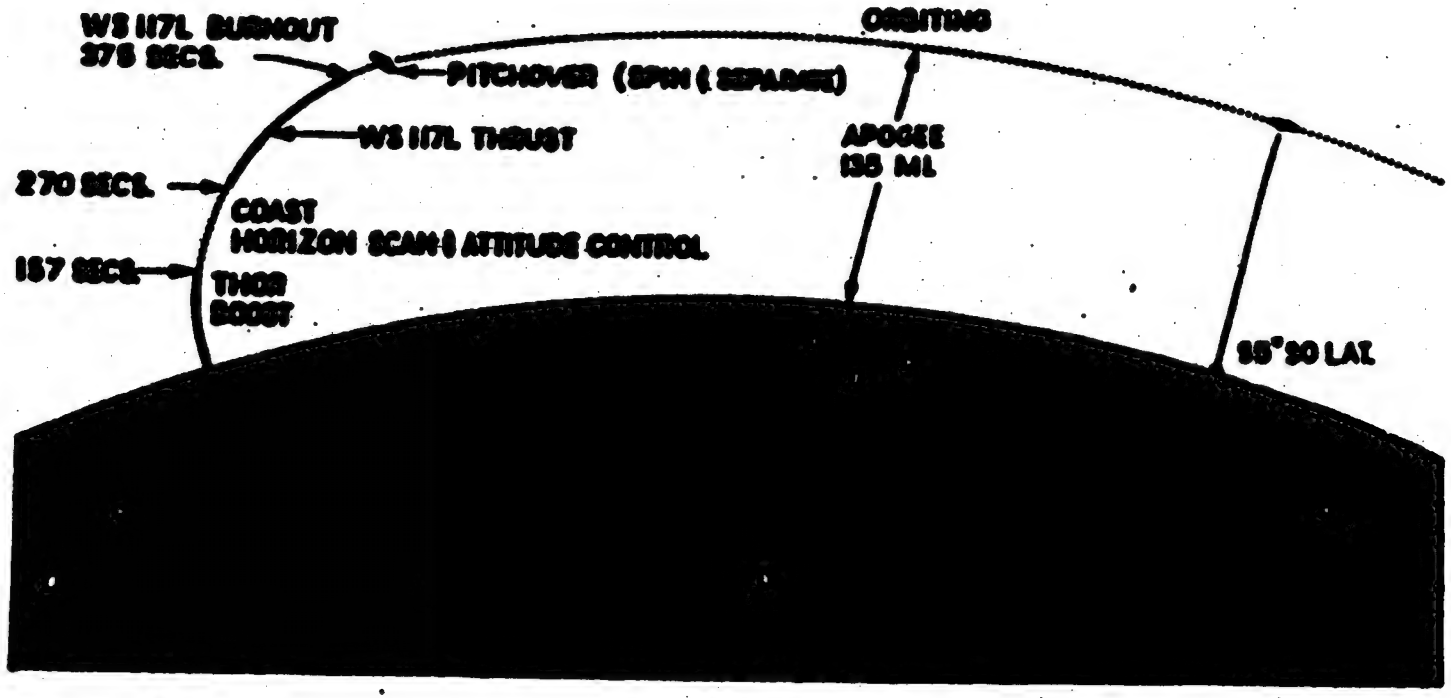
Indicates, by figure at the left, low-latitude test flights to be launched from AFMTC and operational (reconnaissance) missions to be launched in a southerly direction from Cooke AFB. In each instance, a re-entry impulse will be so timed as to cause the recoverable film package to impact at sea in the vicinity of the Hawaiian Islands.

[redacted]

POLAR ORBIT

[redacted]

GUIDANCE:
- AC FOR THOR
- INTERIM GUIDANCE FOR WS 117L



P-440 "F" 2-24-59
179-03-00776

[redacted]

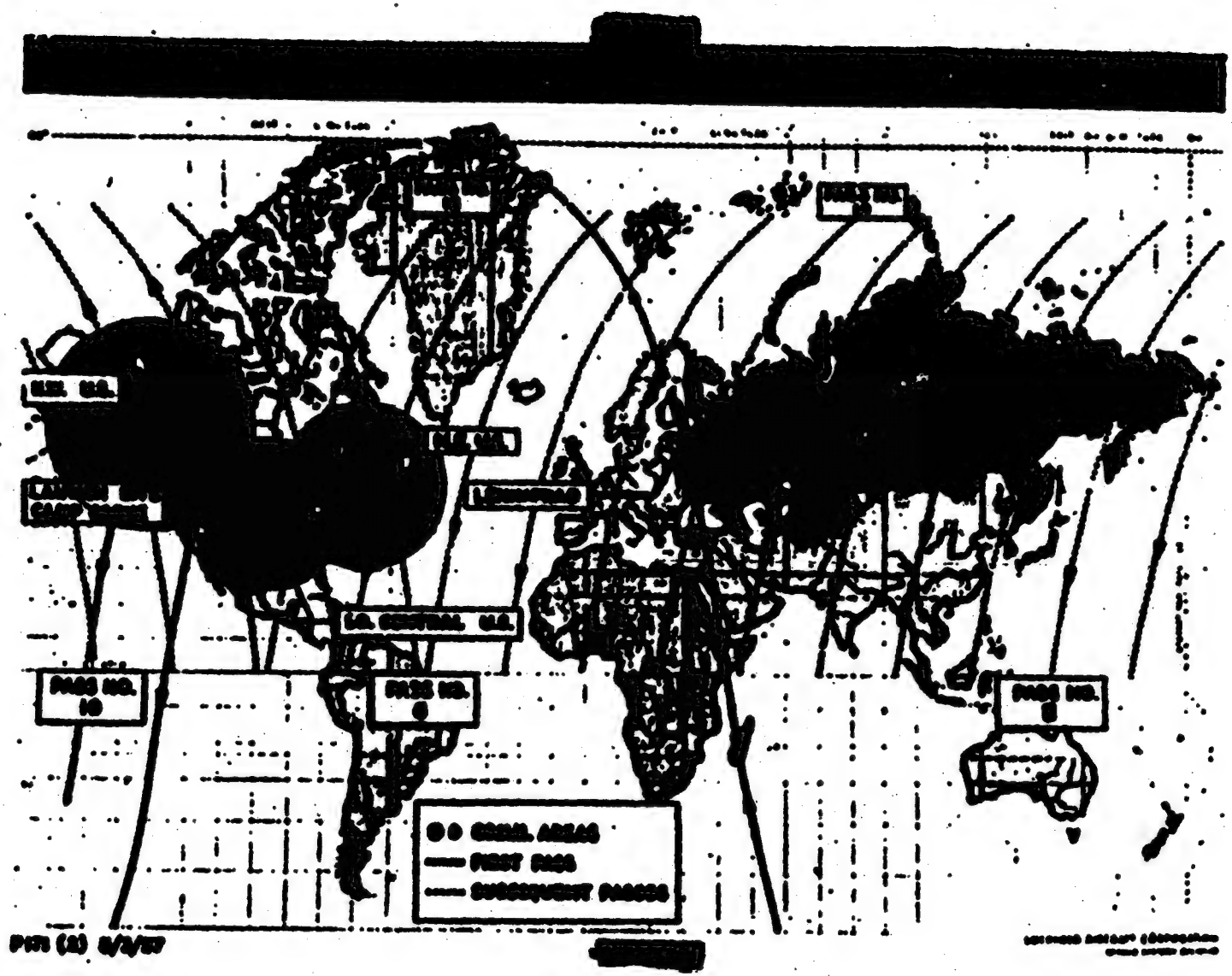
[redacted]

RECOVERY MISSION PROFILE

Presents sequence of events for launch of a Thor-boosted payload recovery satellite from Cooke AFB. As indicated, at burnout of the second (satellite vehicle) stage engine, the satellite is pitched over. The recovery pod containing the reconnaissance camera is made to spin and then is separated from the vehicle to continue on an independent orbit. The pod is stabilized in inertial space by its spin. The initial orientation is such that at 35 degrees south latitude, its longitudinal axis will be parallel to the surface of the earth. At this orientation the pod is also parallel to the surface of the earth as it passes over Soviet territory.

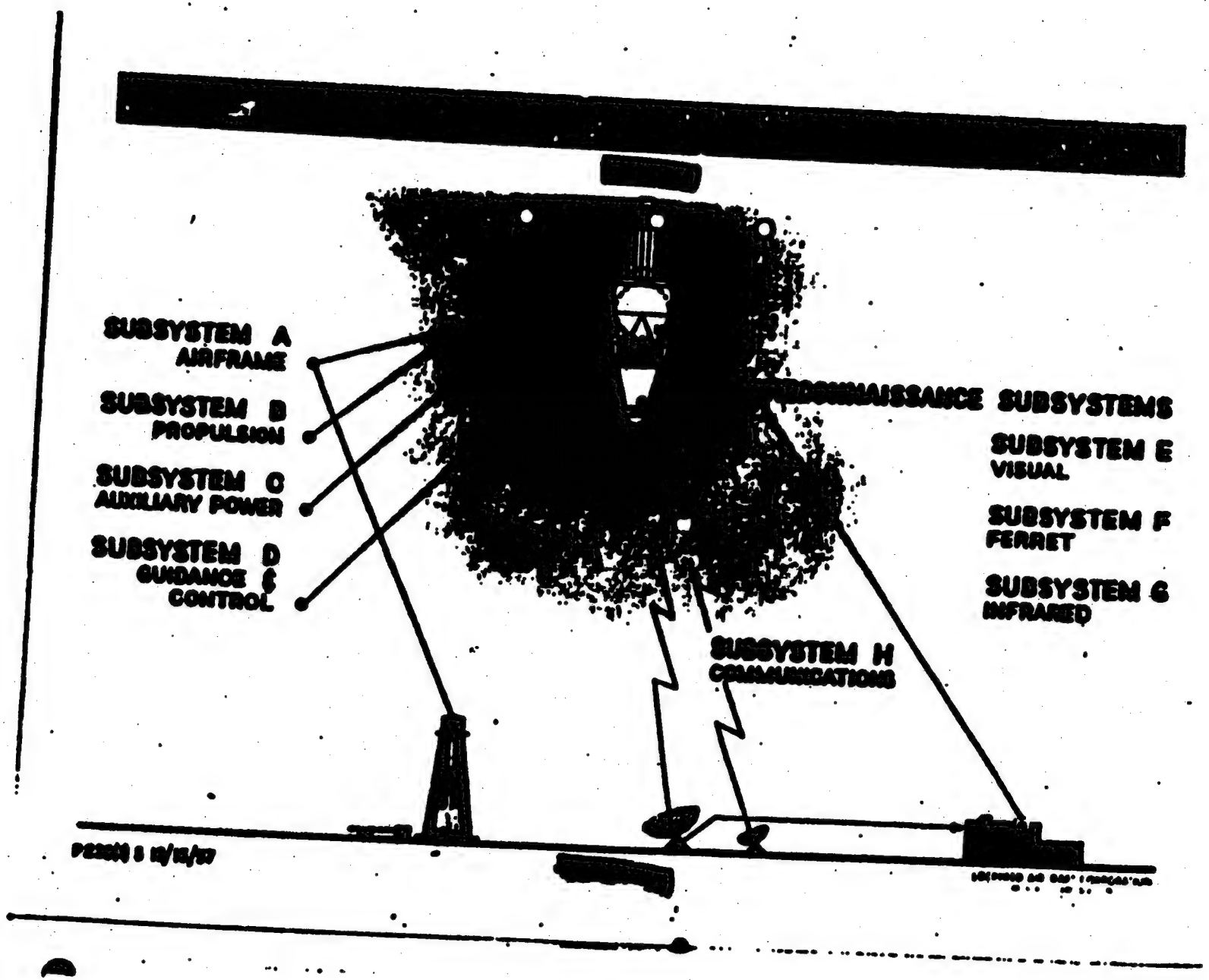
35

[redacted]


GOAL AREAS
FIRST PASS
SUBSEQUENT PASSES

RS-117L GROUND TRACKS OF 63-INCLINE ORBITS

Indicates ground traces of a satellite vehicle on an orbit inclined 63 degrees to the plane of the equator. This orbit has been found for use in operational reconnaissance missions. Global areas on the North American continent between the ranges of ground control stations located in the central U.S. area, and northern and northwest locations.


SUBSYSTEM A
AIRFRAME
SUBSYSTEM B
PROPULSION
SUBSYSTEM C
AUXILIARY POWER
SUBSYSTEM D
GUIDANCE &
CONTROL
SUBSYSTEM E
VISUAL
SUBSYSTEM F
FERRET
SUBSYSTEM G
INFRARED
SUBSYSTEM H
COMMUNICATIONS

C

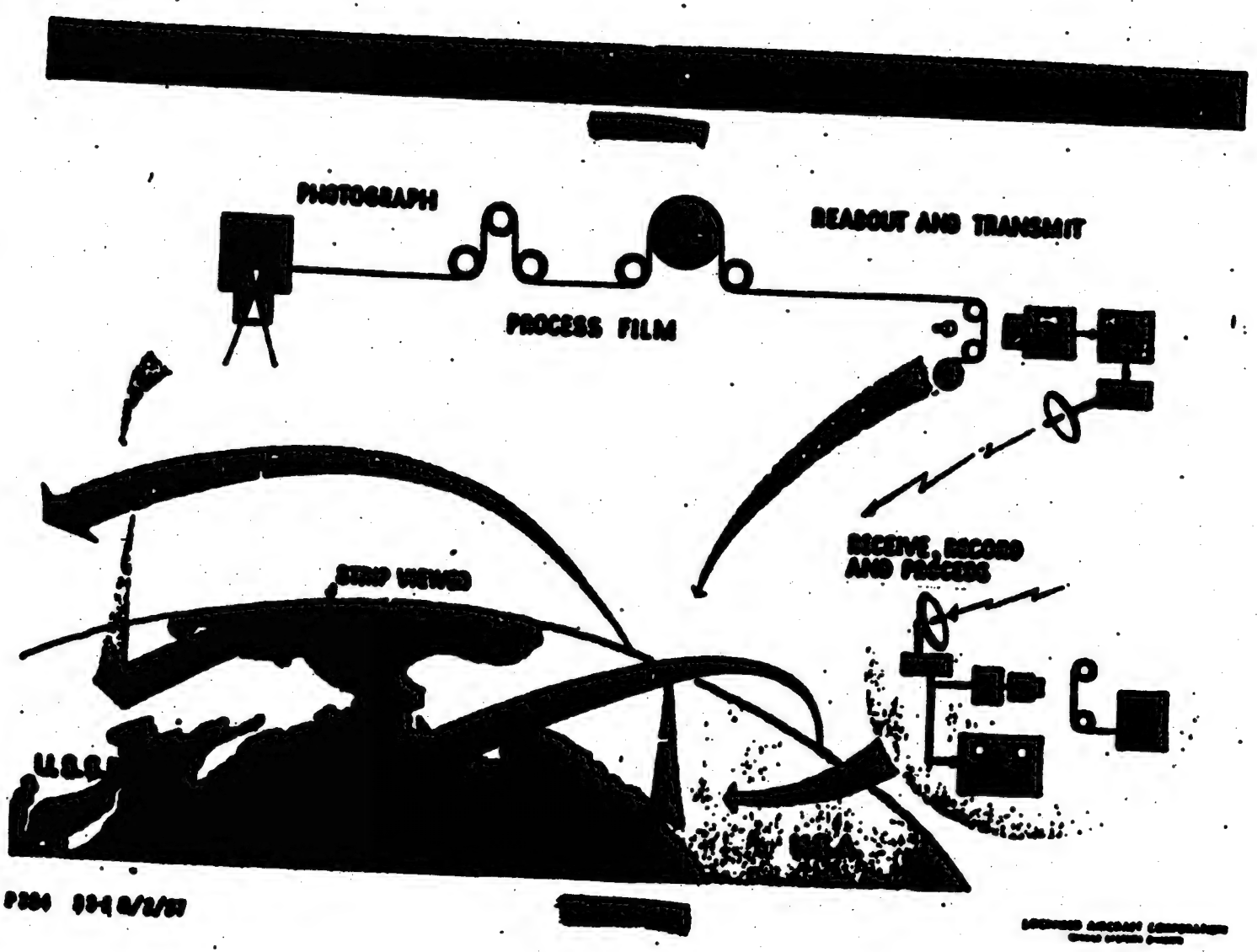
[redacted]

THE WS-117L SUBSYSTEMS

Lockheed has the Weapon System Contractor, for management control purposes, has factored the load area of responsibility into more readily manageable subsystems.

[redacted]

D


PHOTOGRAPH
PROCESS FILM
READOUT AND TRANSMIT
RECEIVE, RECORD AND PROCESS
STRIP VIEWED
U.S.S.R.

[redacted]

RS-117L ARS VISUAL RECONNAISSANCE SYSTEM

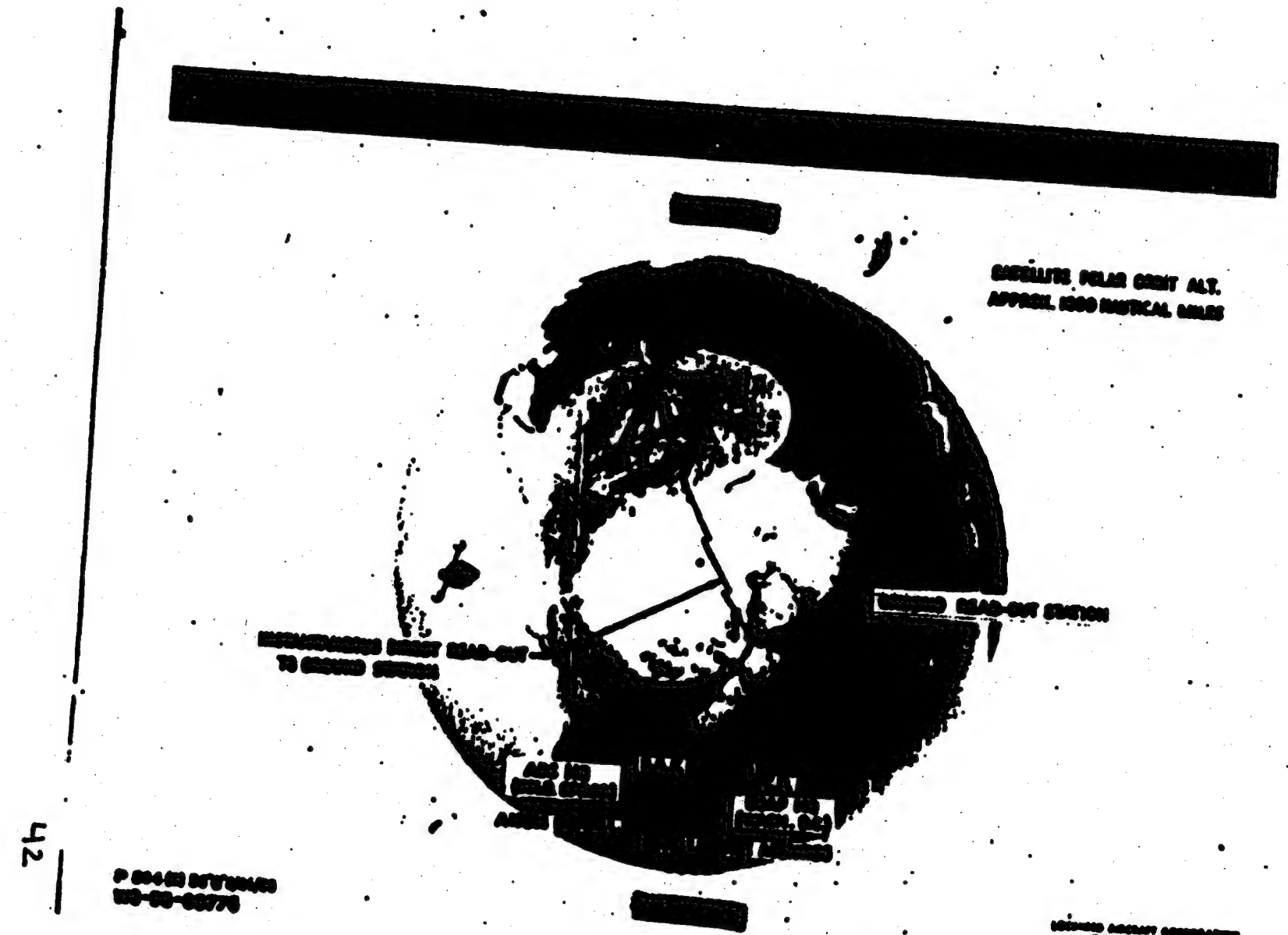
Illustrates the operation of the satellite vehicle visual reconnaissance system. The Pioneer system, utilizing a 6-inch focal length lens, will photograph a 100-mile-wide strip on each pass over the territory of interest. It is designed to provide 180-foot ground resolution and locate objects (targets) to an accuracy of one mile. Nine days of operation, with an average information gathering period of five minutes per revolution of the satellite, would provide photographic coverage of a ground area of not less than 54 million square miles.

The Advanced visual system, utilizing a 36-inch focal length lens, would cover a 20-mile-wide swath with 20-foot ground resolution and a location accuracy of one-half mile. Programmed coverage of selected targets would be feasible.

The ultimate, or Surveillance system, utilizing multiple satellites, would provide daily surveillance of all targets at 17-foot resolutions or better. Each satellite vehicle would have an operational (data-gathering) life of at least one year.

Serving as a subcontractor to Lockheed Missile Systems Division, the Eastman Kodak Company assisted by the Columbia Broadcasting System Laboratories is directing the research, development, fabrication and assembly of visual payload components.

[redacted]



WS-117L INFRARED RECONNAISSANCE SYSTEM
ICBM ATTACK WARNING

Illustrates how satellite vehicles equipped with infrared sensing devices could detect, and instantaneously report to a USAF-controlled ground station, the launching of ballistic missiles having an intercontinental range capability.

At a nominal altitude of 1800 nautical miles, infrared sensors would have a mean slant range of 2600 nautical miles; each IR-equipped satellite would scan an area of 12 million square miles every thirty seconds. The launching of an IRBM/ICBM missile within this area would be detected by the IR sensors, and be instantaneously reported to a ground-located monitoring station.

WS-117L INFRARED SURVEILLANCE-RECONNAISSANCE

OPERATIONAL OBJECTIVES

- ICBM ATTACK WARNING
- AIR ACTIVITY INDICATION
- AIRBORNE "STRIKE" DETECTION & TRACKING
- ICBM TRACKING AND PREDICTION

[redacted]

KS-117L INFRARED RECONNAISSANCE SYSTEM

A statement of principal operational objectives of the Infrared Satellite Reconnaissance System, identified as Subsystem "G"; Program VIII of the KS-117L Development Plan.

[redacted]

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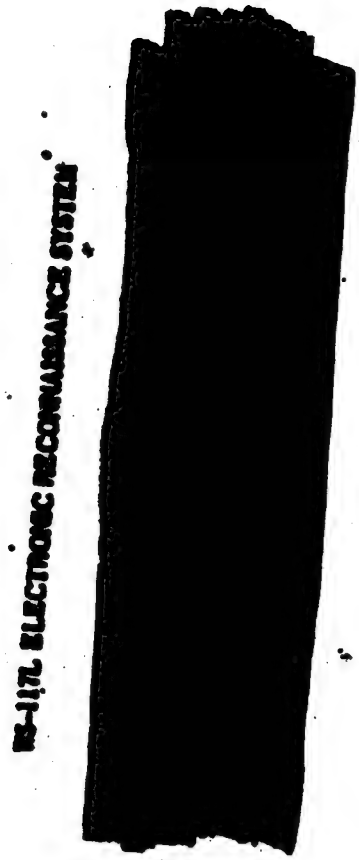


[redacted]

OBJECTIVE

[redacted]

[redacted]

[redacted]

FILM IMAGE READOUT

36 INCH LENS

17 FOOT RESOLUTION

ORIGINAL SCENE

FILM IMAGE IN SATELLITE

IMAGE RECORDED ON GROUND

[redacted]

[redacted]

[redacted]

[redacted]

ADVANCED VISUAL RECONNAISSANCE SYSTEM SIMULATED PHOTOGRAPHS— 36-INCH LENS

Laboratory-simulated photographs demonstrating the quality of data to be expected from the operation of an Advanced Visual Reconnaissance System (WS-117L Program IV) utilizing a 36-inch focal-length camera lens, 17-foot resolution.

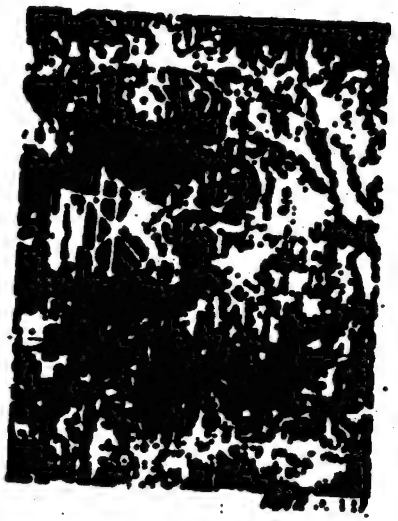
The 36-inch lens is in an advanced state of development, with delivery of the first unit scheduled for January 1959.

[redacted]

FILM IMAGE READOUT

6 INCH LENS

ORIGINAL SCENE



FILM IMAGE IN SATELLITE

IMAGE RECORDED ON GROUND

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PIONEER VISUAL RECONNAISSANCE SYSTEM
SIMULATED PHOTOGRAPHS — 6-INCH LENS

Presents laboratory-simulated photographs demonstrating the quality of data to be expected from the operation of a Pioneer Visual Reconnaissance System utilizing a 6-inch focal-length camera lens, 100-foot resolution.

Balloon-borne high-altitude flight tests conducted in September 1957 confirm these laboratory simulations.

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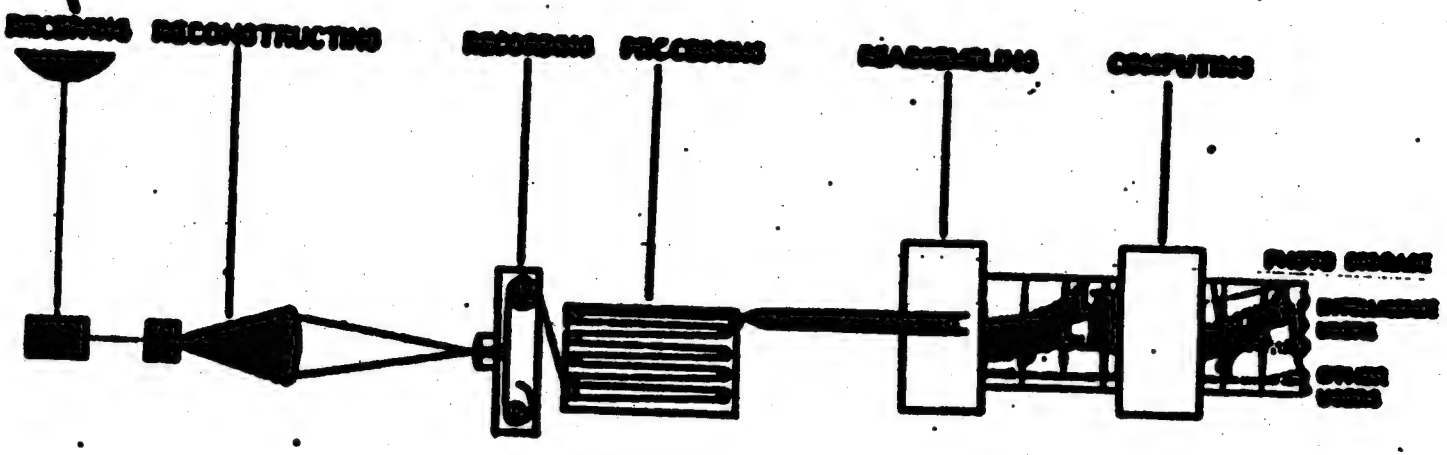
GROUND RECONSTRUCTION PROCESSES

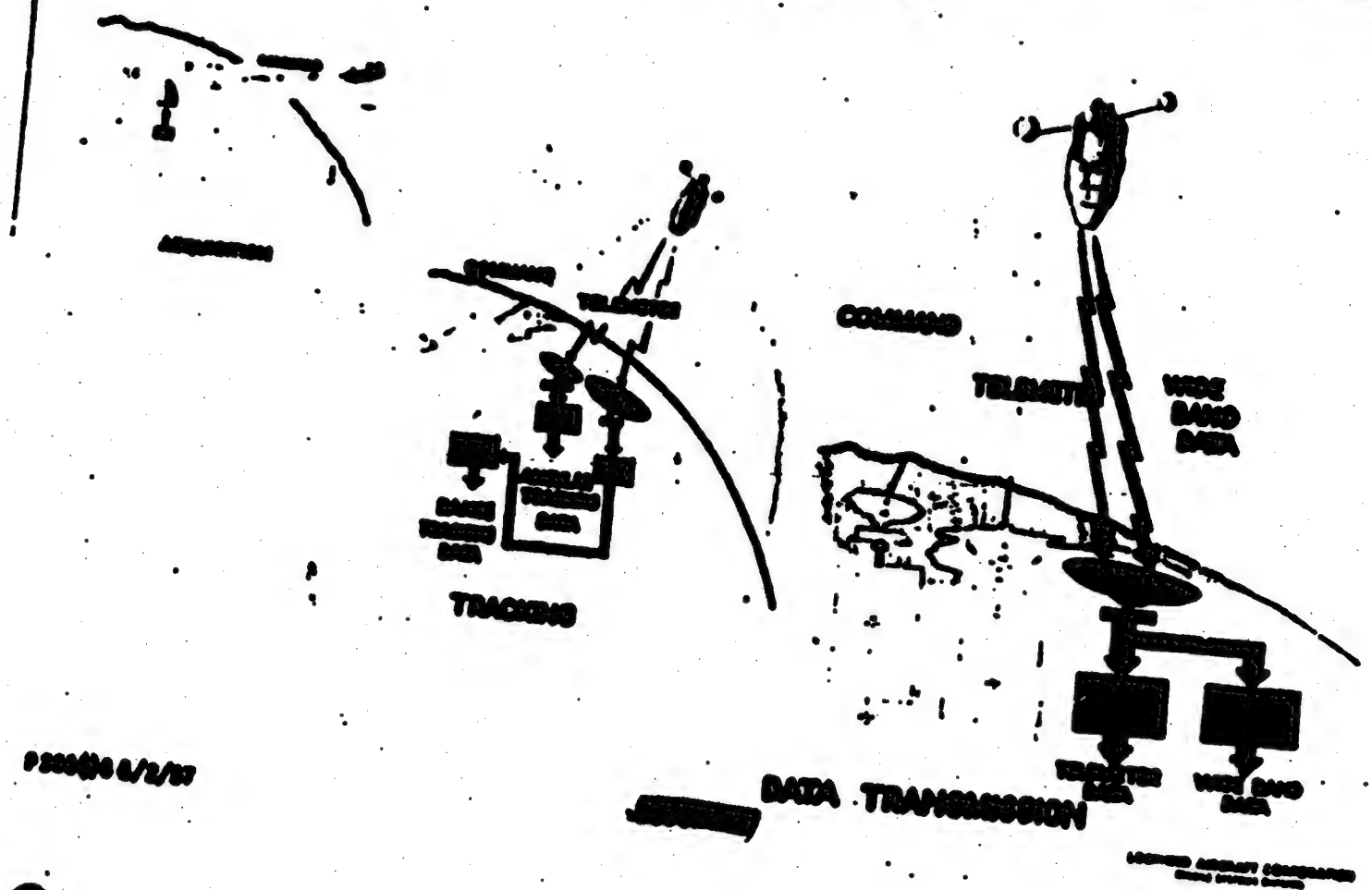


RS-117L VISUAL RECONNAISSANCE SYSTEM
GROUND RECONSTRUCTION PROCESSES

A schematic diagram of the ground processes required for the Pioneer Visual Reconnaissance System, including data recording, reconstruction, and geographic classification.

[redacted]

TYPES OF OPERATION



[redacted]

WS-117L COMMUNICATION SYSTEM

Illustrates the principal areas encompassed by the WS-117L ground-space communication system:

Satellite acquisition (locating the vehicle in space)
Satellite tracking: orbit computation and prediction
Data transmission -- communications from satellite to ground, ground to satellite, and ground to ground.

The Philco Corporation is serving as the principal subcontractor for this subsystem of WS-117L.

FEATURES FOR SCIENTIFIC APPLICATION

[redacted]

PROVIDED BY WS-117L VEHICLE CAPABILITY

- PAYLOAD WEIGHT CAPACITY UP TO A TON (MORE FOR ADVANCED VERSIONS)
- PAYLOAD VOLUME CAPACITY UP TO 70 CUBIC FEET
- ATTITUDE ORIENTATION STABILIZATION TO ±1 DEGREE
- NUMBER OF VEHICLES AVAILABLE, ESPECIALLY FOR SMALLER PAYLOADS (DUE TO WS-117L REQUIREMENTS AND USE OF OPERATIONAL MISSILE FOR BOOSTER)
- LONG ORBITING DURATION AFFORDED BY 300-MILE ALTITUDES OR HIGHER
- LONG PAYLOAD OPERATION WITH MODEST POWER THROUGH SOLAR OR CHEMICAL BATTERIES; OR WITH NUCLEAR AUXILIARY POWER PLANTS FOR HIGH POWER
- POLAR ORBITS AVAILABLE THROUGH PERFORMANCE MARGIN AND IOC LAUNCHING SITE
- WIDE-BAND DATA LINK FOR TRANSMISSION OF INFORMATION
- CAPACITY TO CARRY TWO OR MORE PAYLOADS FOR COINCIDENCE-TYPE EXPERIMENTS
- GUIDANCE ACCURACY TO PLACE VEHICLE INTO ORBITS OF AS LITTLE AS 20-MILE ECCENTRICITY
- POSSIBILITY OF SETTING UP LINKS BETWEEN TWO SATELLITES
- HIGHER ALTITUDES INCLUDING POSSIBILITY OF 70-POUND PAYLOADS AT 2700 MILES
- TRACKING SYSTEM MEASUREMENTS ANGULAR TO ±1 MIL AND ALTITUDE TO 1 MILE

[redacted]

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[redacted]

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RS-117L SATELLITE VEHICLE
SCIENTIFIC RESEARCH APPLICATIONS

Although Reopen System 117L is being developed for military reconnaissance purposes, the satellites' large payload-carrying capacity makes it attractive as a medium for geophysical research purposes. The Air Force Cambridge Research Center maintains close liaison with the Reopen System Contractor on geophysical matters.

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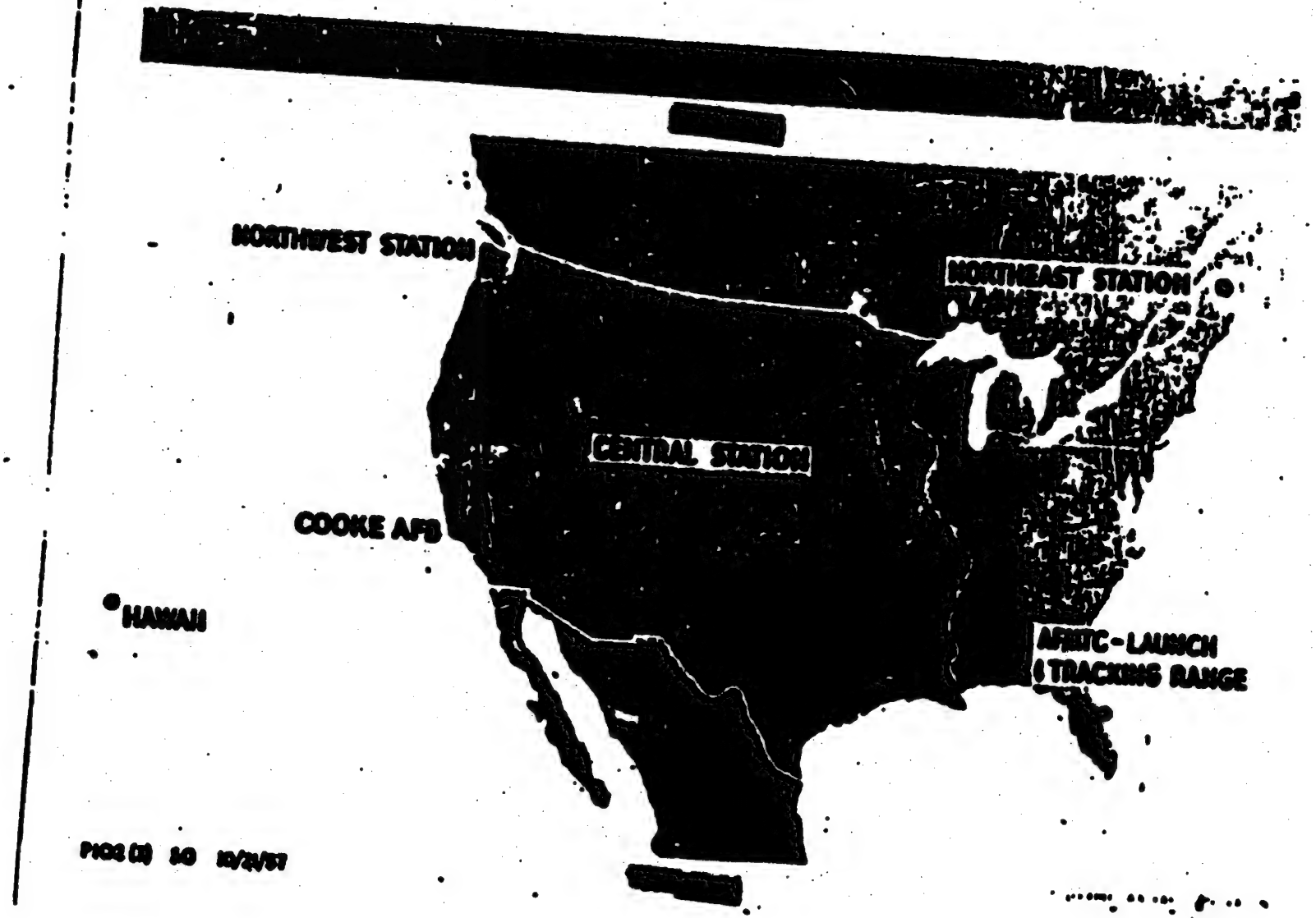

NORTHWEST STATION
NORTHEAST STATION
CENTRAL STATION
COOKE AFB
HAWAII
AFETC-LAUNCH
& TRACKING RANGE

I

[redacted]

[redacted]

E-3TL FACILITY REQUIREMENTS

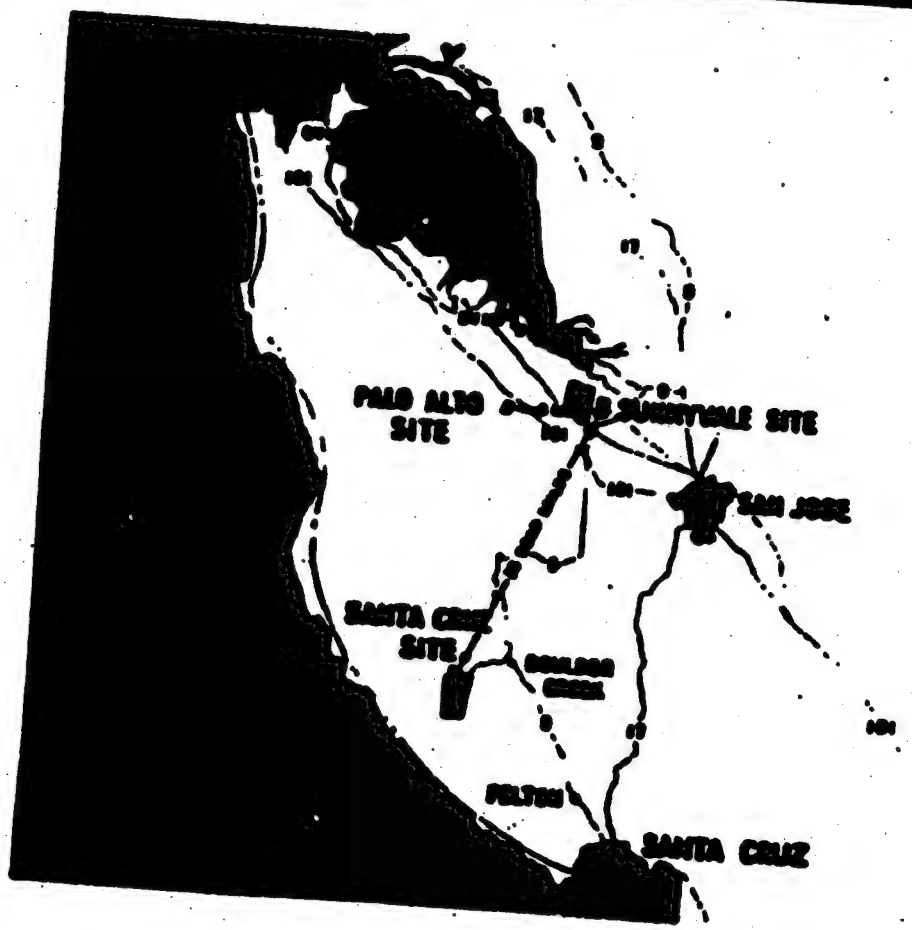
A plot of the principal facilities required for the flight testing and operation of the advanced reconnaissance system.

New Air Force facilities required solely for the AWACS system are:

- Portable Obstacle Training Course
- Northrop and Raytheon U.S. Training Station
- Central U.S. Training and Control Station, and Intelligence Data Processing Center

[redacted]

[redacted]


PALO ALTO SITE
SUNNYVALE SITE
SAN JOSE
SANTA CRUZ SITE
FELTON
SANTA CRUZ

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

SAN FRANCISCO BAY AREA FACILITIES

A map of the San Francisco Bay Area showing the location of recently constructed Lockheed facilities for the exclusive use of the Missile Systems Division. These facilities, comprising approximately 600,000 square-feet of shop and office space and a capital investment in excess of 22 million dollars are:

Palo Alto --

Research and Development Laboratories
HS-117L Project Offices

Sunnyvale --

Division Headquarters
Laboratories, In-plant Test Facilities; Prototype Fabrication

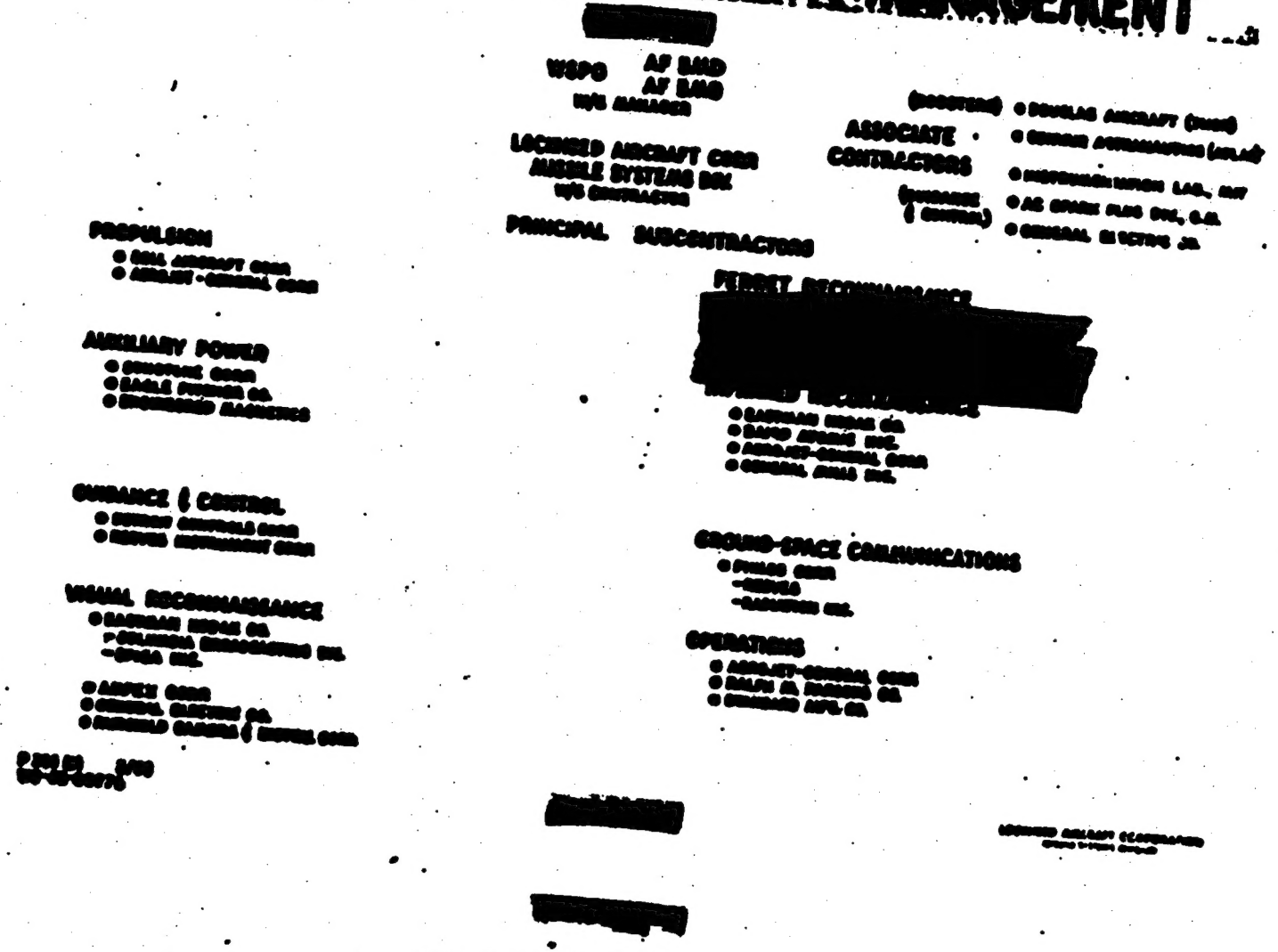
Santa Cruz Mountains --

An integrated facility for all types of hazardous tests.

Additional facilities are under construction, or in the advanced planning stage to provide total floor space in excess of one million square feet. A complete manufacturing facility is also operated at Van Nuys, California.

[redacted]

WS-117L SYSTEM DEVELOPMENT MANAGEMENT



WS-117L SYSTEM DEVELOPMENT MANAGEMENT

Indicates the relationships between the Weapon System Project Office, the Weapon System Contractor, and associate contractors. Also shown are the principal subcontractors working under the technical direction of Lockheed Missile Systems Division, the Weapon System Contractor. Chief among these are

Bell Aircraft Corporation	Satellite Rocket Engine Development
Eastman Kodak Company, Columbia Broadcasting System	Visual Reconnaissance System Research and Development
Philco Corporation	Ground-Space Communication System Research and Development
[redacted]	[redacted]
General Electric Company	Payload Recovery Capsule
Aerojet-General Corporation, Eastman Kodak Company	Infrared Subsystem Development
Fairchild Camera & Instrument Corporation	Aerial Camera for Photo-physical Recovery Program

The following industrial concerns are working directly for the U.S. Atomic Energy Commission in the development of long-duration (radioisotope and small nuclear reactor) auxiliary power systems for use in the ARS satellite vehicles: North American Aviation; The Martin Co.; Thompson Products.

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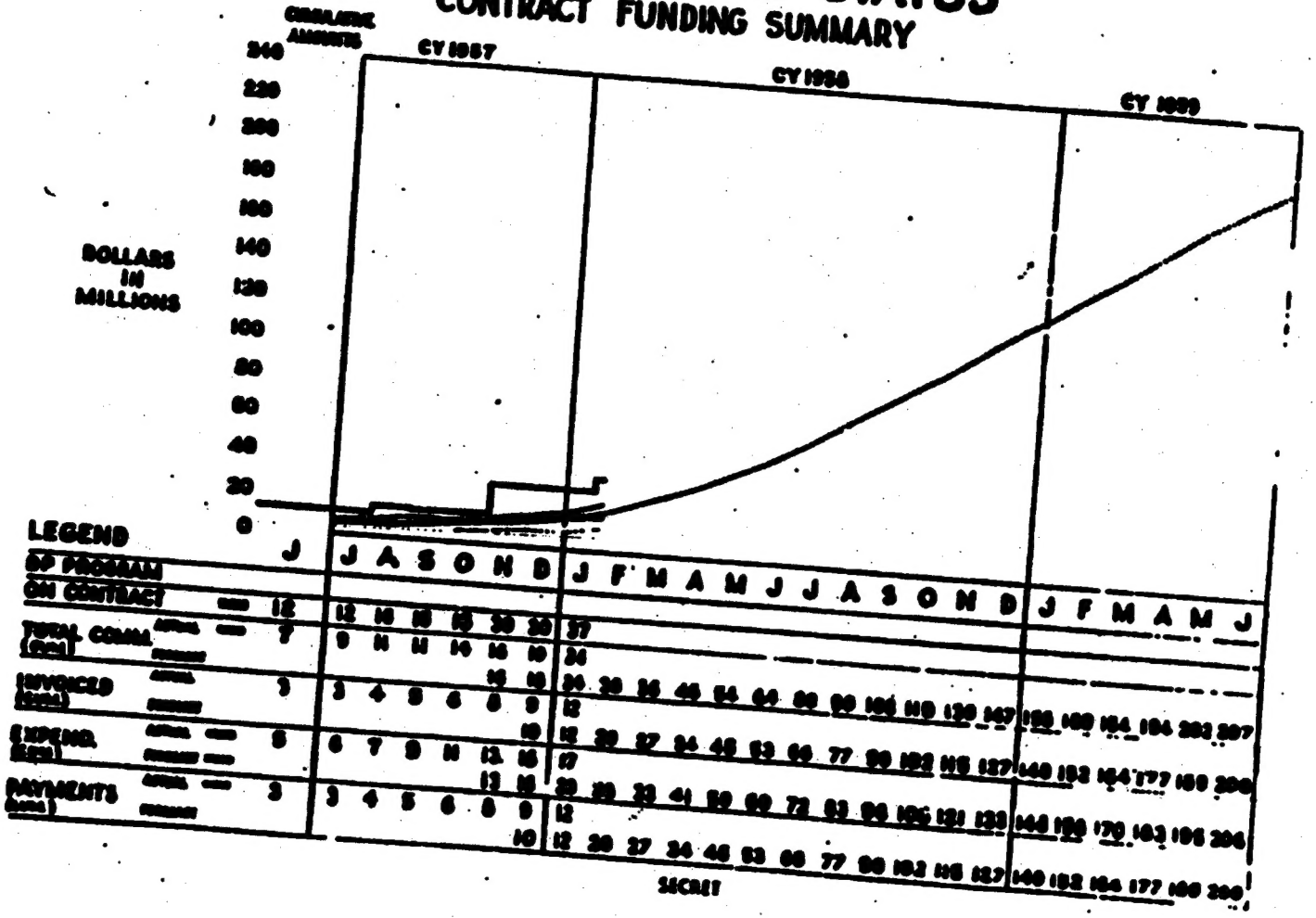
FINANCIAL MGMT. STATUS
CONTRACT FUNDING SUMMARY



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WS-117L WEAPON SYSTEM CONTRACTOR'S FUNDING PROGRAM

Summarizes the principal financial aspects of Contract AF 04(647)-97, covering the period 1 October 1956 through 30 June 1959. As indicated, funds totaling $31 million had been placed on contract through December 1957. An additional $7 million were provided in January 1958 by Letter Contract AF 04(647)-181. Cumulative expenditures plus outstanding commitments as of 31 December 1957 totaled $17.6 million. Projected expenditures are only indicative, as details of the accelerated program remain subject to negotiation.

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